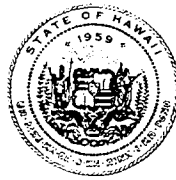


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in reply, please refer to:
EMD / SHW

January 4, 1996

POLICY UPDATE
Technical Guidance Manual
for Underground Storage Tank Closure and Release Responses
Reporting, Remediation, and Management
of Petroleum-Contaminated Soil

TO ALL INTERESTED PARTIES:

The Hawai'i Department of Healths (DOH) Solid and Hazardous Waste Branch, Underground Storage Tank Section, is issuing a policy update to its *Technical Guidance Manual for Underground Storage Tank Closure and Release Responses* (August, 1992). This policy update is effective as of February 1, 1996.

This update introduces DOH-recommended action levels for total petroleum hydrocarbon (TPH) in soil and provides additional guidance and clarification regarding proper reporting and management of petroleum-contaminated soil left in place at former underground storage tank release sites regulated by the DOH Solid and Hazardous Waste Branch.

Please bring this policy update to the attention of anyone you know who may have an interest in this matter. Should you have any questions regarding this policy update, please contact the Underground Storage Tank Section at (808) 586-4226.

Sincerely,


STEVEN Y. K. CHANG, P.E. MANAGER
Solid and Hazardous Waste Branch

Attachment

REPORTING, REMEDIATION, AND MANAGEMENT OF PETROLEUM-CONTAMINATED SOIL

Technical Policy Update

SUBJECT

The Department of Health (DOH) is re-instating soil action levels for total petroleum hydrocarbon (TPH) in soil. This technical policy bulletin discusses the background and necessity for this action and further clarifies DOH policy regarding the reporting, remediation, and management of petroleum-contaminated soil discovered at leaking underground storage tank (LUST) sites regulated under RCRA I.

A summary of the policy clarifications and updates is given below, followed by a discussion on the background of the policy and specific guidance for carrying out the policy. Items 1, 3, and 4 below are presented as clarifications of existing DOH policy, rather than new policy guidelines as presented in item 2. The guidance presented should be followed at regulated UST release sites unless otherwise approved or directed by DOH.

SUMMARY

1. Petroleum-contaminated soil should be remediated to the point that: 1) DOH-recommended action levels or approved, alternative action levels for individual constituents of concern are met and 2) contaminated soil left in place at a release site does not create nuisance problems.
2. In addition, petroleum-contaminated soil should be remediated to the point that TPH-gasoline does not exceed 2,000mg/kg, TPH-diesel does not exceed 5,000mg/kg, and TPH-oil does not exceed 5,000mg/kg (as measured using approved laboratory or field methods, including immunoassay analysis; use of field methods requires a 10% laboratory confirmation). Soils exposed within 50cm (20 inches) of the surface should be additionally remediated to address visual and olfactory nuisance concerns.
3. DOH reserves the right to require that the full extent of petroleum-contaminated soil be delineated at LUST sites on a site-by-site basis, especially at sites where offsite migration of petroleum is suspected and/or at sites regarded as ecologically sensitive.
4. Off-site re-use and disposal of petroleum-contaminated soil must adhere to guidelines and regulations put forth by the DOH Office of Solid Waste Management.

BACKGROUND

Soil that has low to moderate levels of residual total petroleum hydrocarbon (TPH) is commonly left in place at sites where releases of diesel fuel or heavier petroleum products have occurred and less commonly at older gasoline-release sites. Provided that recommended soil action levels are met for specific constituents of concern, DOH has not considered such soil to pose a significant threat to human health or the environment and has allowed the soil to be left in place at release sites with the condition that offsite re-use and disposal abide by Office of Solid Waste Management regulations and guidelines should the soil ever be excavated.

When left in place at a release site, however, petroleum-contaminated soil can pose potential nuisance concerns, concerns regarding offsite migration of residual free product (e.g., via the groundwater), and concerns regarding future off-site re-use and disposal of the soil. In previous guidance (*Technical Guidance Manual for Underground Storage Tank Closure and Release Response* (TGM), August, 1992)) DOH has recommended that "grossly contaminated" soil and free-phase product be remediated in order to minimize potential exacerbation of the release or potential nuisance problems (TGM, sections 5.3.1 and 5.4.1). Subsequent reporting and management of petroleum-contaminated soil left in place at release sites has, however, been very inconsistent and DOH has received numerous requests for TPH "cleanup" criteria as well as clarification of DOH policy regarding the reporting and management of petroleum-contaminated soil left in place at release sites.

For example, in several recent instances petroleum-contaminated soil was unexpectedly discovered at former LUST sites that had been issued recommendations of "no further action necessary" by DOH. Contamination at the sites had indeed been remediated to DOH-acceptable levels but, because DOH had not required that TPH contamination be tested for and reported, there was no clear documentation that petroleum-contaminated soil had been left on site. Because the source and nature of the contaminated soil subsequently discovered was uncertain, costly and unnecessary confusion arose in regards to the legal and environmental implications of "previously undetected" and "uncharacterized" contamination still being present at the site. In other cases, particularly at sites with releases of diesel-range fuel, facilities have attempted to leave soil with unacceptably high levels of total petroleum contamination in place because the soil met DOH constituent-specific criteria for groundwater protection and direct-exposure concerns, even though petroleum-saturation levels were such that a significant threat for offsite migration of free-phase product existed (e.g., via the groundwater).

TOTAL PETROLEUM HYDROCARBON SOIL ACTION LEVELS

In order to address the problems noted above, DOH is re-instating soil action levels for total petroleum hydrocarbon (TPH). The TPH action levels noted in item two above and restated below are intended to serve as maximum levels of soil TPH contamination

that can be left in place at a LUST site regardless of whether constituent-specific soil criteria have been met:

TPH - gasolines	2,000mg/kg
TPH - middle distillates	5,000mg/kg
TPH - residual fuels	5,000mg/kg

(as measured using approved laboratory or field methods, including immunoassay analysis, HIDO, 1992, 1993; immunoassay analyses should follow guidance provided in the HEER office technical guidance manual). The TPH soil action levels replace earlier DOH guidelines for use of FID or PID field instruments to delineate the extent of "gross contamination" at release sites. Use of field screening instruments is still encouraged, however, for general site investigation purposes.

Gasolines are defined as petroleum fuel products characterized by a predominance of alkyl benzenes and straight-chain, branched, and cyclo- alkanes and alkenes with carbon ranges of C6 to C12. Middle distillates (e.g., kerosene, diesel fuel, home heating fuel, jet fuel, etc.) are defined as petroleum fuel products characterized by a predominance of straight-chain alkanes and polynuclear aromatic hydrocarbons with carbon ranges of C12 to C24. Residual fuels are defined as petroleum products characterized by long chain alkanes (carbon range > C24) and less predominant aromatics that include phenanthrenes, benzopyrenes, and other poly-nuclear aromatic hydrocarbons.

The TPH soil action levels noted are intended to further protect against potential offsite migration of free product held in soil (e.g., via migration to groundwater) and against potential nuisance concerns. The action levels are based on field experience and discussions with environmental consultants experienced with petroleum-contaminated soil. At some sites, particularly those with soils contaminated by heavy residual oil products, the action levels presented may be unnecessarily stringent. In such cases, the facility should specifically request (in writing) that a more site-specific approach for management of TPH contaminated soil be implemented at the site. In other cases, particularly where large volumes of diesel-contaminated soil are directly in contact with groundwater, more stringent TPH soil action levels may be necessary in order to prevent potential offsite migration of free product.

In addition, DOH recommends that petroleum-contaminated soils within 50cm (approximately 20 inches) of the ground surface be remediated to address immediate visual and olfactory nuisance concerns. In many industrial areas, however, DOH realizes that this may not be feasible and indeed a large proportion of surface releases in such areas may be due to frequent but small quantity leaks (e.g., from vehicles) that are not directly subject to regulation (i.e., release < 25 gallons). In these cases DOH will evaluate the need for TPH-based clean-up guidelines on a site-specific basis.

POLICY SUMMARY

DOH requires that soil and groundwater impacted by petroleum releases be remediated to address groundwater-protection and direct-exposure concerns for the site as well as near-surface nuisance concerns. If a site meets DOH-acceptable criteria regarding these concerns then DOH will agree that no further remedial or investigative action is necessary. As initial guidance, DOH recommends that contaminated soil and groundwater discovered at LUST sites be remediated to default (Tier 1), constituent-specific and TPH action levels. If DOH receives nuisance complaints regarding the site or discovers that residual petroleum has migrated offsite and impacted adjacent properties or nearby groundwater or surface water bodies, then additional investigation and/or remedial action may be required. (Note that DOH expects to present updated Tier 1 action levels for soil and groundwater in December, 1995. The TPH soil action levels presented above will be included in that update. DOH will also present procedures for the generation of more site-specific, "Tier 2" soil action levels at the same time.)

As alluded to in the previous section, it is not uncommon for small volume of petroleum-contaminated soil to be left in place at former LUST sites after remediation to DOH-acceptable cleanup recommendations. It should be emphasized that DOH does not require that sites with contaminated soil and groundwater be restored to original, pristine conditions. Not only is this generally unnecessary from a human-health and environmental-protection standpoint, but in many cases this is not economically or technologically practical or feasible.

At LUST sites where petroleum-contaminated soil has been left in place and residual TPH levels are such that DOH may require oversight if future offsite re-use and disposal activities take place, a note stating this will be made in the "no further action" letter submitted to the facility. Perhaps more importantly, the presence of the contaminated soil will be documented in the DOH public record for the site as a reference for future development and excavation activities. Note that, contrary to previous draft versions of this policy, DOH will not require that the extent of petroleum-contaminated soil left in place at a former LUST site be defined with respect to TPH except on a site-by-site basis. Full delineation of petroleum-contaminated soil with respect to TPH may be particularly necessary at sites where offsite migration of petroleum is suspected and/or at sites that are regarded as especially ecologically sensitive.


Should petroleum-contaminated soil left in place at a release site ever be excavated, it may be re-used on site without oversight by DOH provided that nuisance concerns are addressed and provided that the soil is not disposed of in an ecology-sensitive area (e.g., wetlands, marshes, near surface water bodies, etc.). If the petroleum-contaminated soil is excavated and transported off-site, however, proper re-use and disposal of the soil should be discussed with the DOH Office of Solid Waste Management.

References:

HIDOH. 1992. *Technical Guidance Manual For Underground Storage Tank Closure and Release Response, August, 1992*: State of Hawai'i, Environmental Management Division, Department Of Health.

HIDOH. 199_. *Technical Guidance Manual for Implementation of the Hawai'i State Contingency Plan (in preparation)*: State of Hawai'i Department of Health, Hazard Evaluation and Emergency Response.

APPROVED / ~~DISAPPROVED~~


Bruce S. Anderson, Ph.D., Deputy Director for Environmental Health
Department of Health

DEC 15 1995

Date